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**SOURCE**

Sinteticheskiye Metody v Oblasti Metalloorganicheskikh Soyedineniy Routi,  
L. G. Makarov and A. N. Nesmeyanov, Institute of Organic Chemistry,  
Academy of Sciences USSR.

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ABSTRACT OF  
"SYNTHETIC METHODS IN THE FIELD  
OF ORGANOMETALLIC COMPOUNDS: III. MERCURY"

This 148-page monograph is the third of a series on organometallic compounds. The actual writing of the series had been practically completed in 1942, but publication was delayed, presumably because of the war. The series covers results reported in the world literature up to 30 June 1941 and supplements them with data on individual syntheses and methods based on work done at two laboratories which have specialized in organometallic compounds: the laboratory of the Institute of Organic Chemistry, Academy of Sciences USSR, and one affiliated with VIEM (All-Union Institute of Electrifaction and Mechanization).

Several non-Russian monographs dealing with mercury-organic compounds are available, but they all classify according to substances, while the present book represents an attempt to classify according to methods. The authors point out two important applications of mercury-organic compounds:

1. Double decomposition with halides of metals and nonmetals in such a manner that the organic radical attached to the mercury is transferred to the central atom of the other compound, thus replacing the halogen. This is a convenient method for the synthesis of certain organic derivatives of arsenic, phosphorus, and iodine.
2. Interaction of a mercury-organic compound and another metal with the formation of an organic compound of the other metal.

Thus, the principal use of mercury-organic compounds in chemistry lies in the synthesis of other organometallic compounds. With respect to the first application, mercury-organic compounds may be successfully replaced by magnesium organic compounds in some cases, although the application of the latter is rather limited in view of: (1) their tendency to restore the halide; (2) the formation of complexes with the ether which is used as solvent; and (3) the fact that organic radicals which can be combined with magnesium must not contain functional groups.

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Mercury, on the other hand, entering into the composition of the radicals, is compatible with practically all functional groups. Furthermore, the second type of reaction mentioned above is typical of mercury and cannot be duplicated by using compounds of other metals. In view of the fact that mercury-organic compounds are important intermediates in synthetic organic chemistry, the study of their applications has received rather close attention from Nesmeyanov and members of his school. The present book has been written from that point of view, i.e., with an eye on methods and applications.

The book lists a great number of references, most of them by non-Russians; however Nesmeyanov's work is well represented. An alphabetical subject index is lacking.

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